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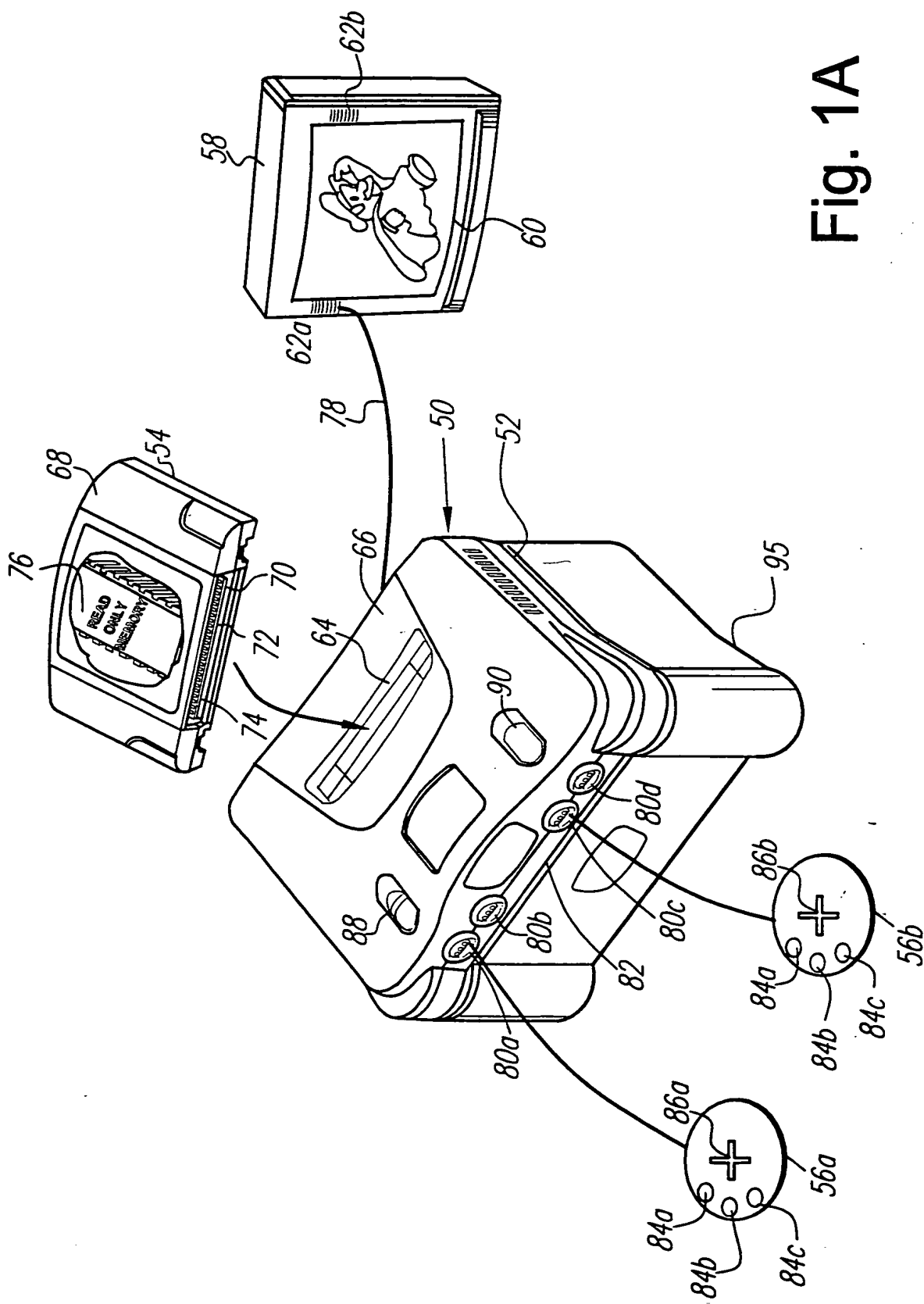


Fig. 1A

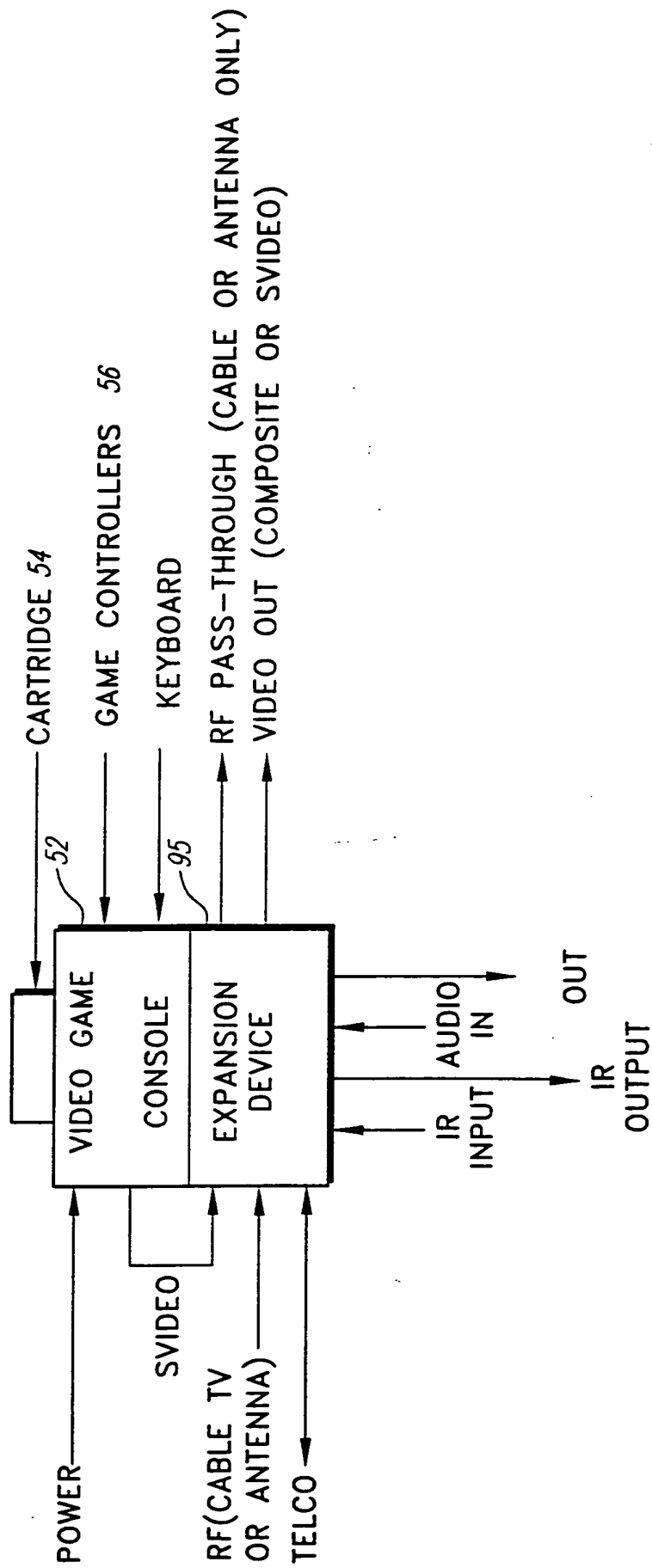


Fig. 1B

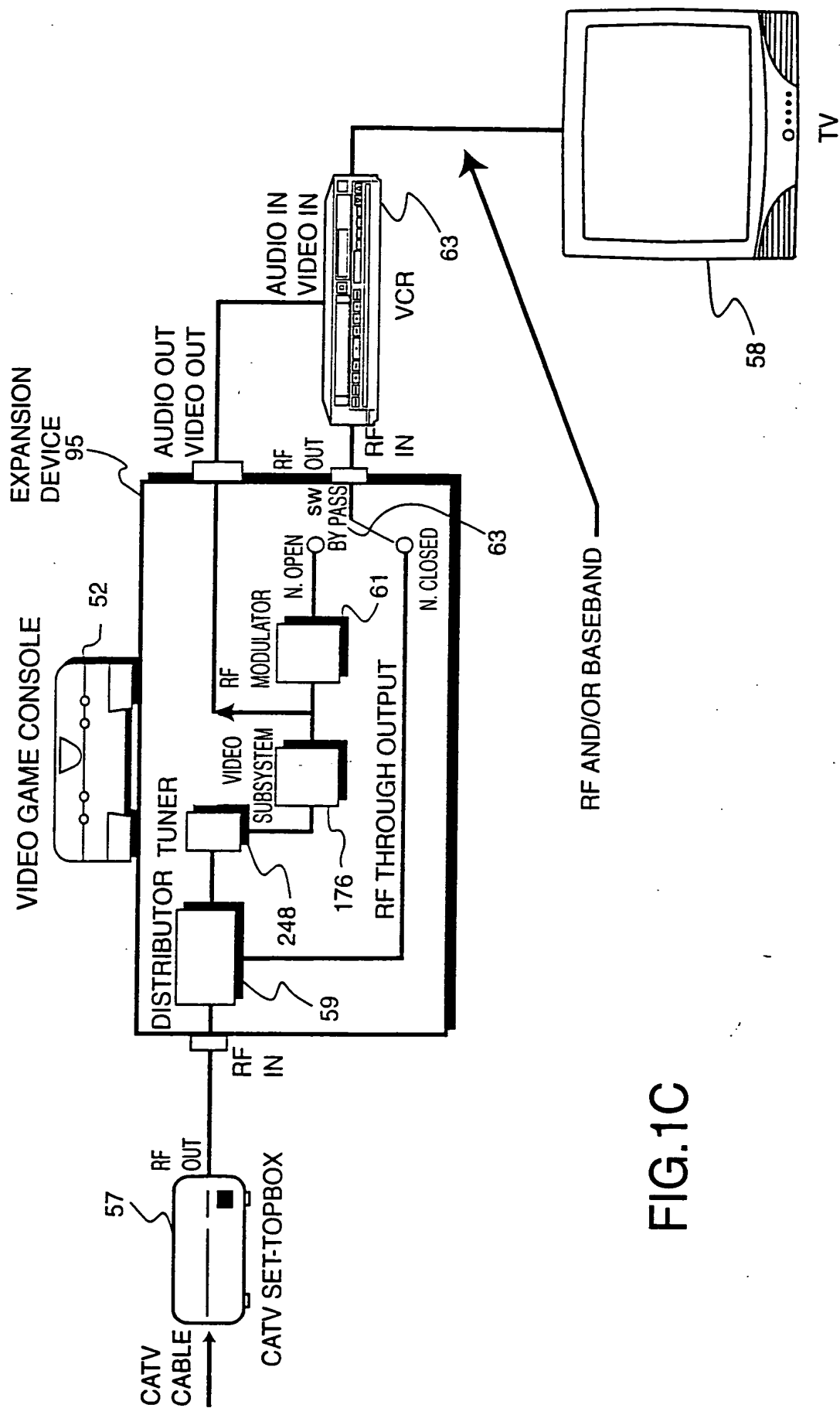
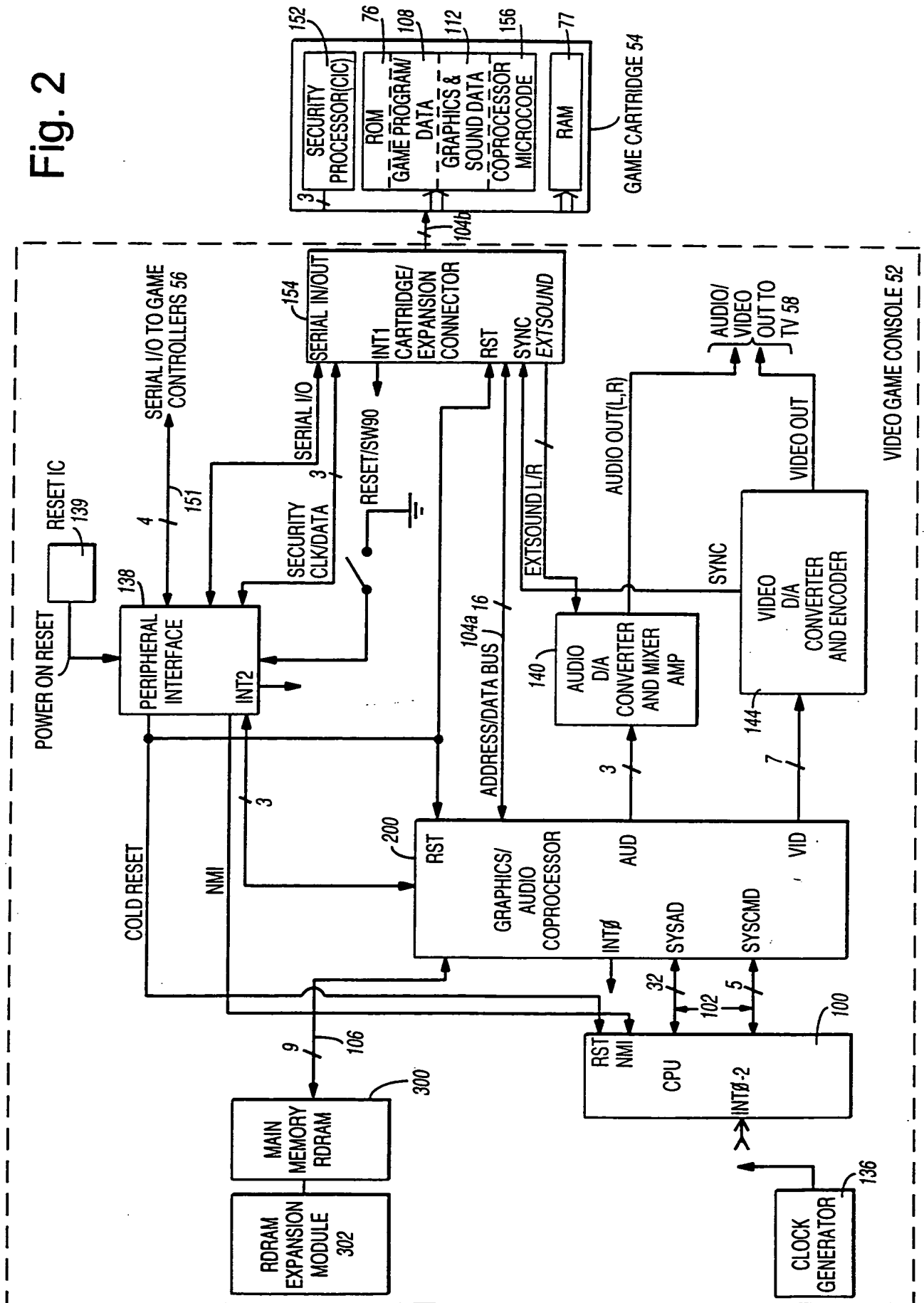


FIG.1C

Fig. 2



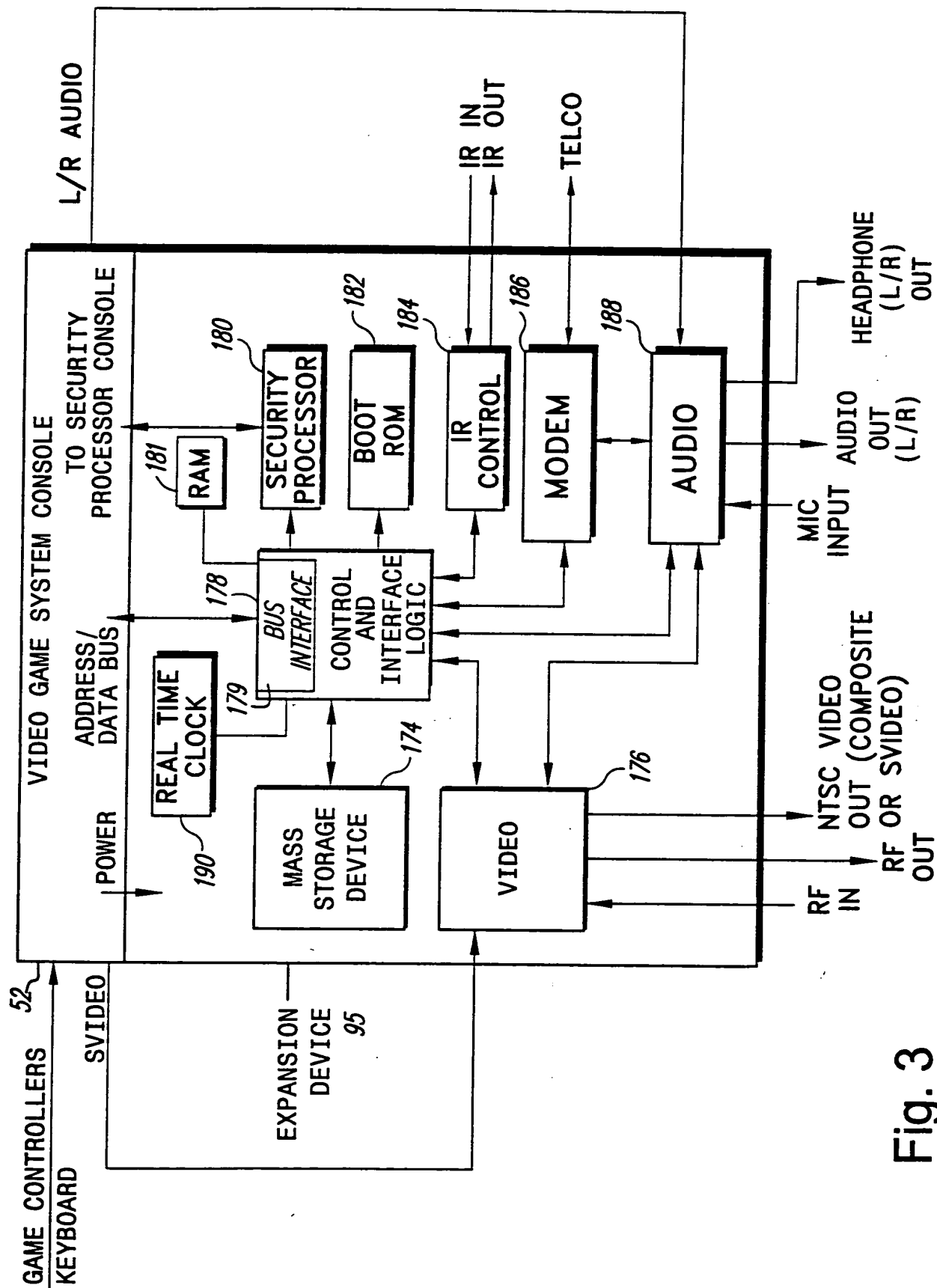


Fig. 3

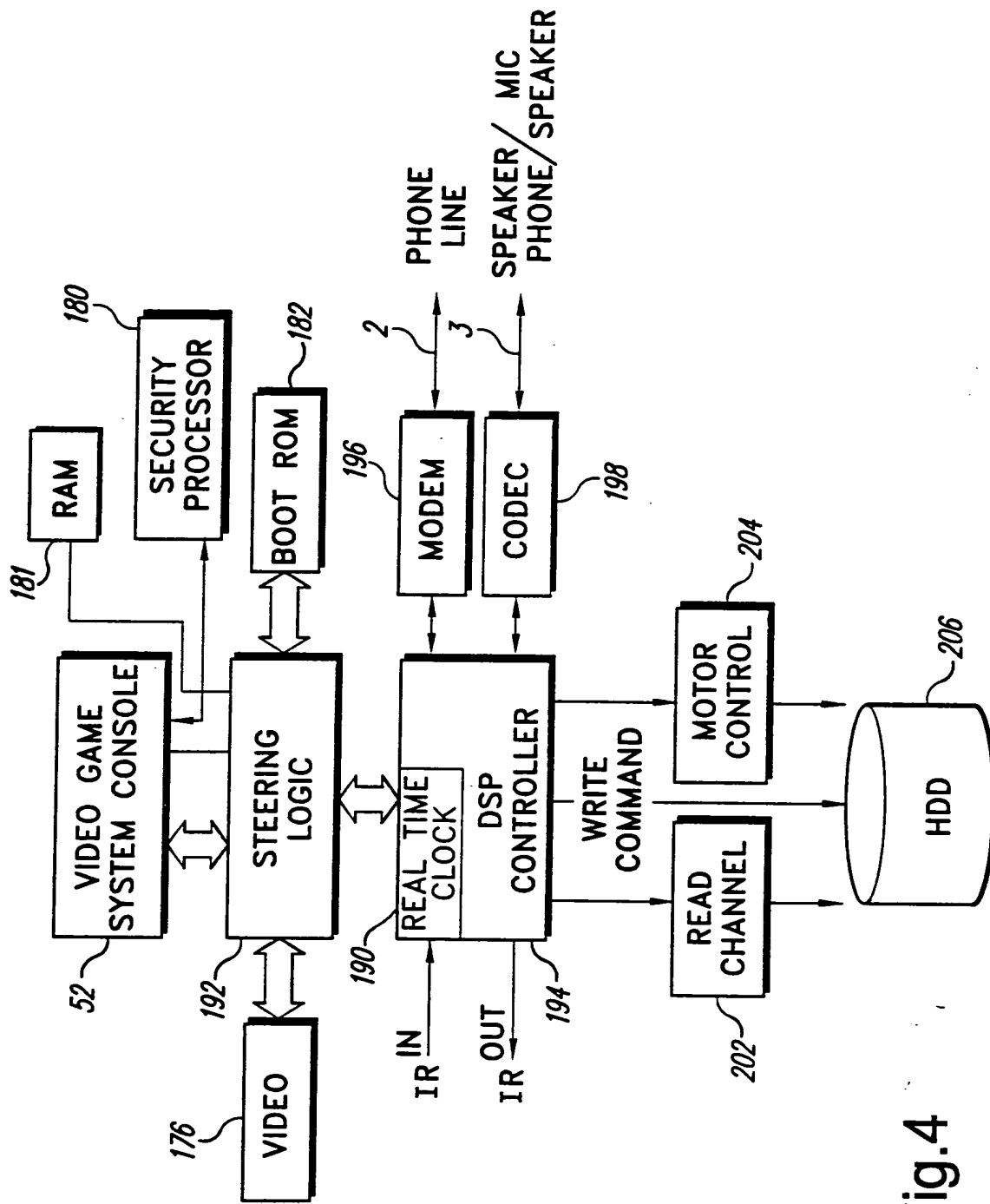


Fig.4

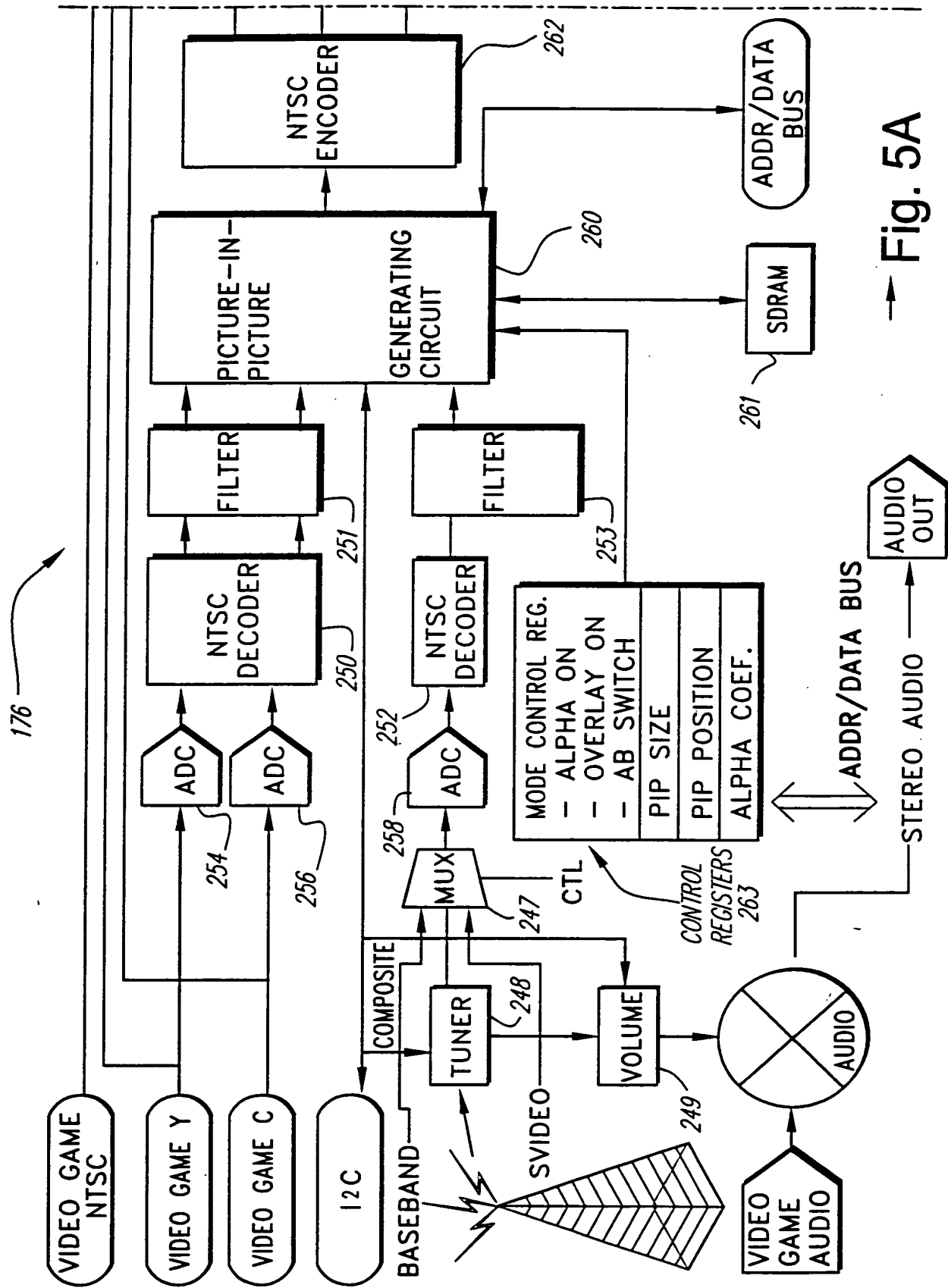


Fig. 5A

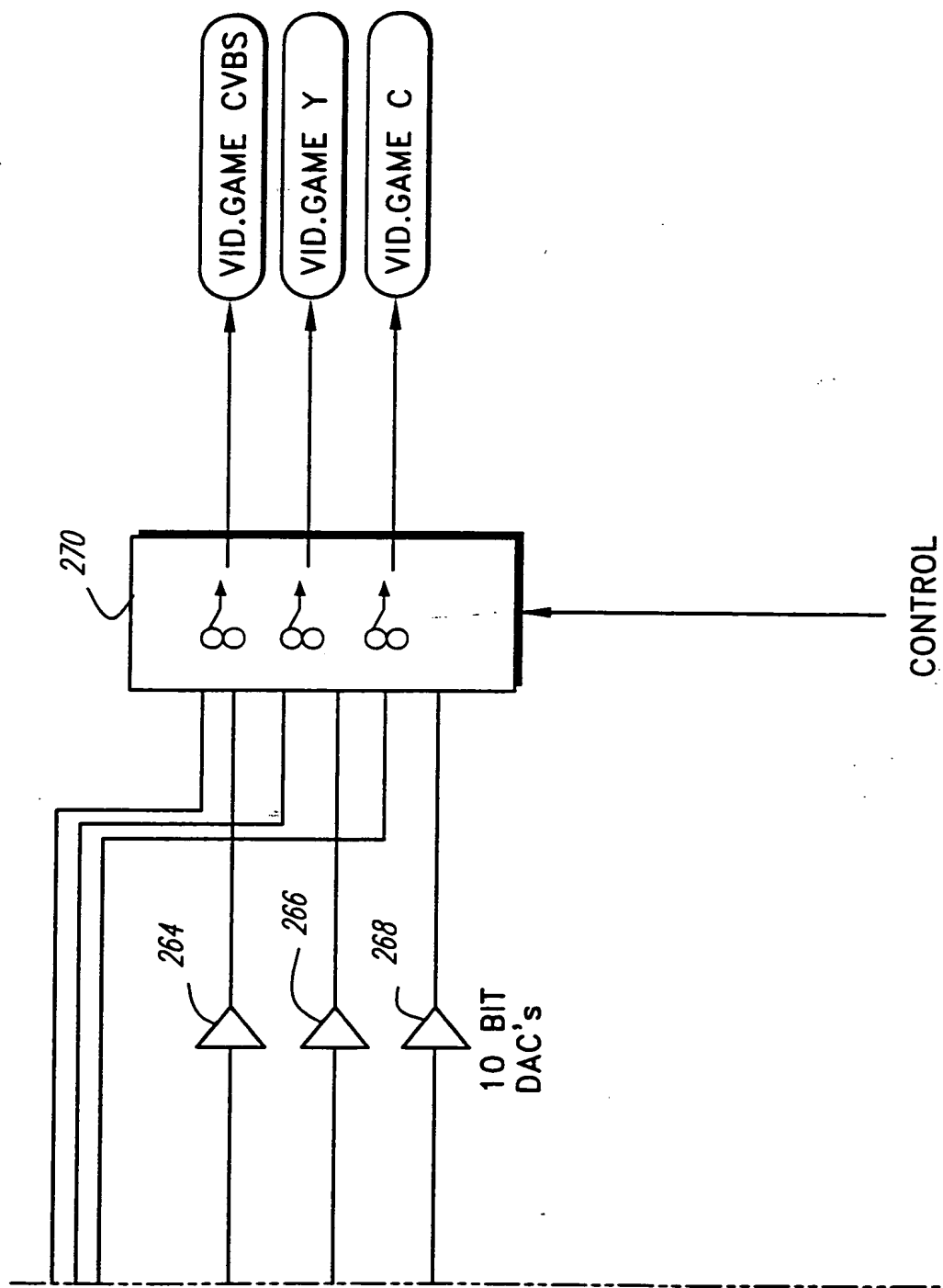
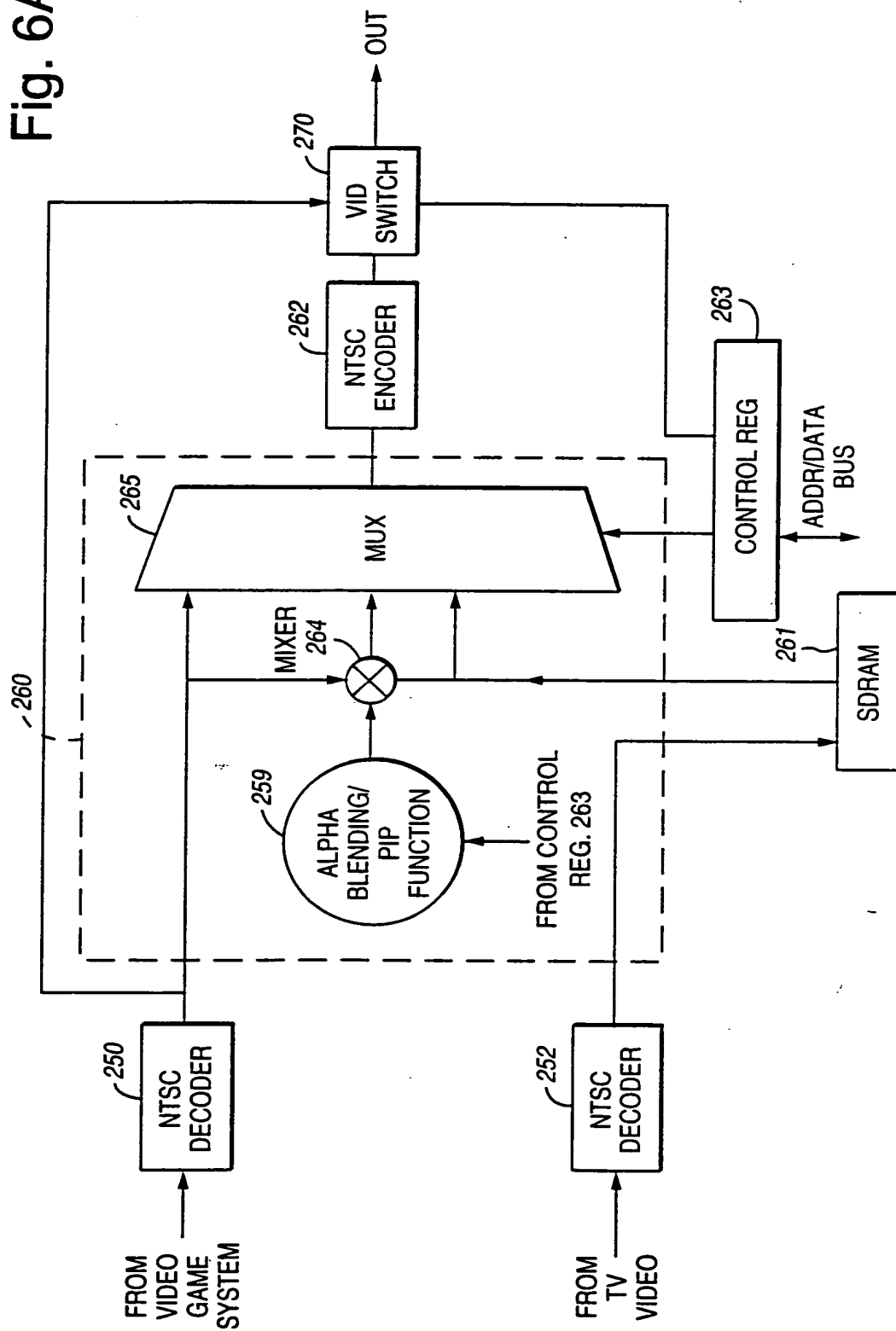


Fig. 5B

Fig. 6A



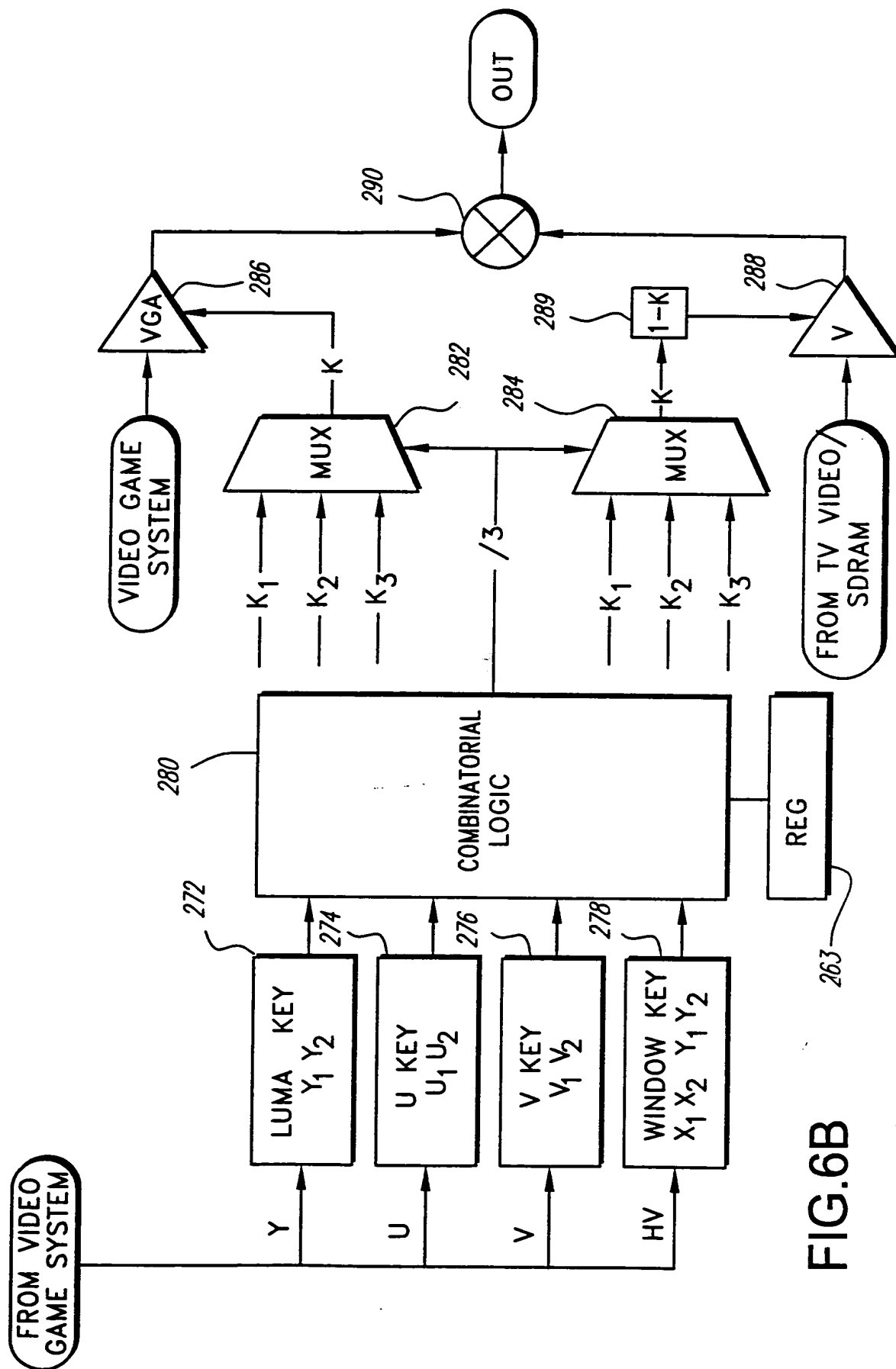


FIG. 6B

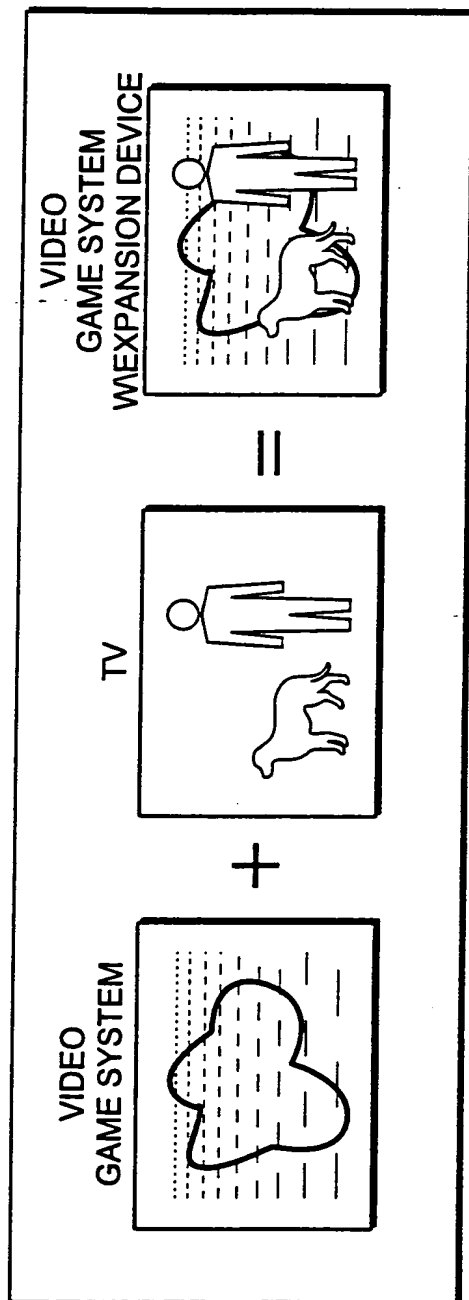


Fig. 6C

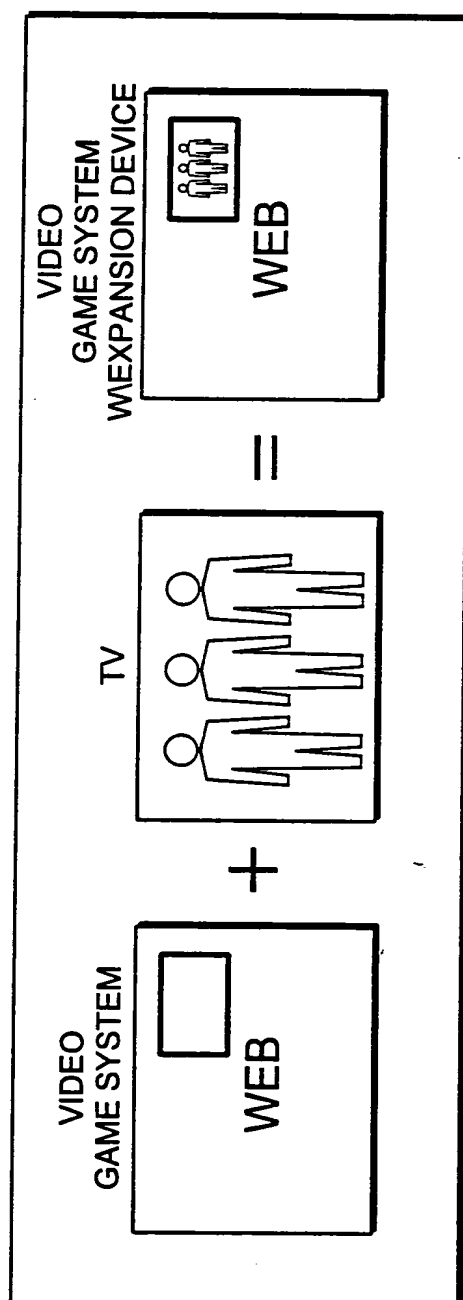


Fig. 6D

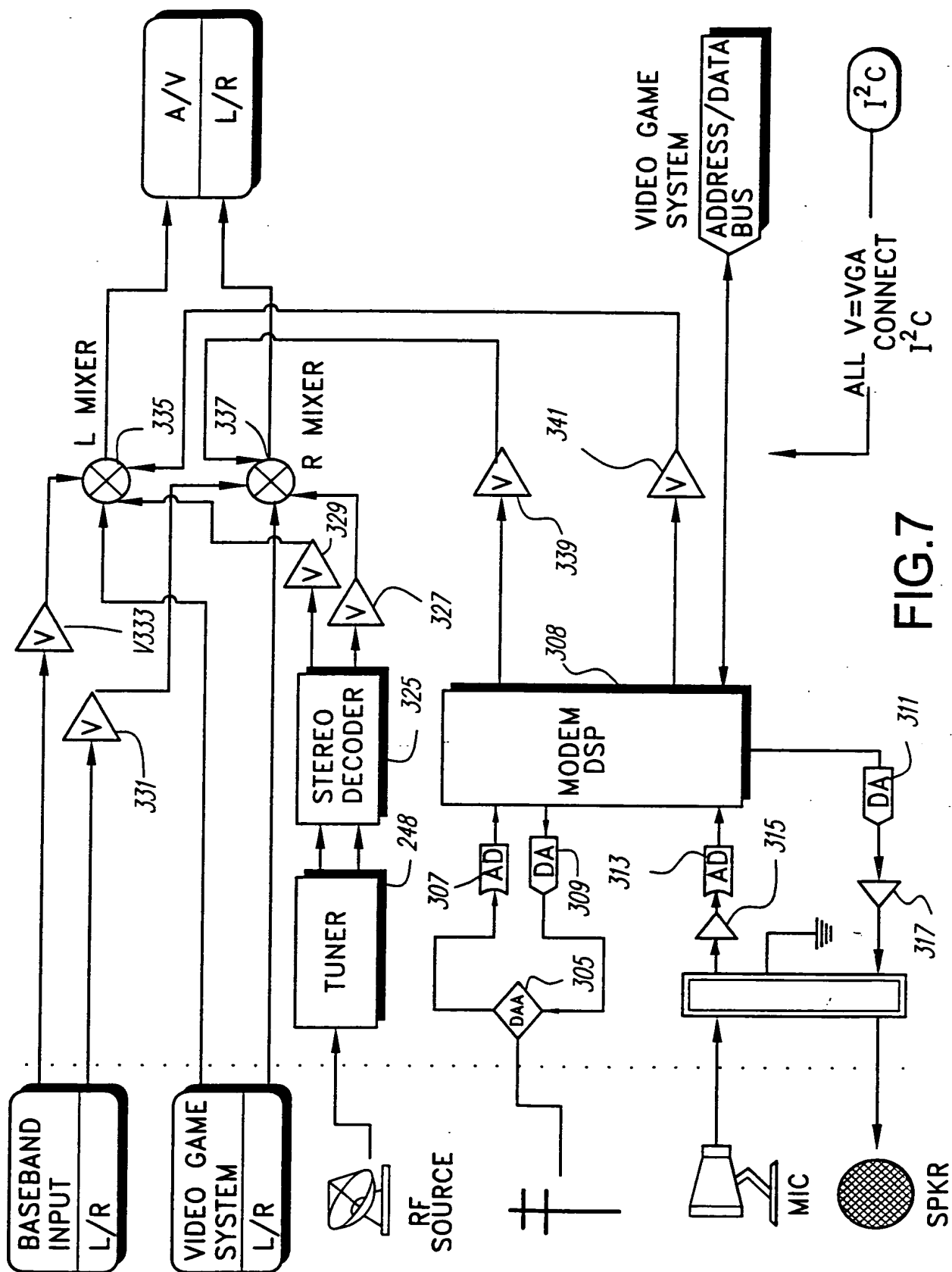


Fig. 8

NAME	R/W	DESCRIPTION
DISK STATUS	R	READ: DISK STATUS
LBA WRITE ADDRESS	W	WRITING TO THIS ADDRESS CAUSES THE CONTENTS OF THE SECTOR BUFFER TO BE WRITTEN TO THE LBA POINTED TO BY THIS LBA WRITE ADDRESS. THE BUFFER COUNTER IS RESET.
LBA READ ADDRESS	W	WRITING TO THIS ADDRESS CAUSES THE CONTENTS OF THE LBA POINTED TO BY THIS LBA READ ADDRESS TO BE READ INTO THE SECTOR BUFFER. THE BUFFER COUNTER IS RESET.
1 ² C S0' OWN ADDRESS REGISTER	R/W	ES0=0 READ/WRITE: OWN ADDRESS
1 ² C S0 DATA REGISTER	R/W	ES0=1 READ/WRITE: 1 ² C DATA
1 ² C S1 CONTROL STATUS REGISTER	R/W	READ: STATUS WRITE: CONTROL
1 ² C S2 CLOCK REGISTER	R/W	READ/WRITE: CLOCK SCALE VALUE
1 ² C S3 INTERRUPT VECTOR	R/W R	ES0=0: READ/WRITE: INTERRUPT VECTOR ES0=1: READ: INTERRUPT VECTOR ACK CYCLE
MODEM IN	R	READ: MODEM STATUS & DATA
MODEM OUT	R/W	WRITE MODEM DATA READ MODEM OUT STATUS
MODEM OUT CONTROL	W	SEPARATE REGISTER TO CONTROL MODEM WRITE FUNCTIONS
SECTOR BUFFER	R/W	512 BYTE SECTOR BUFFER FOR THE HARD DRIVE. THE POINTER INTO THIS BUFFER IS INCREMENTED BY FOUR BYTES EACH TIME THE BUFFER IS READ OR WRITTEN. AFTER 512 BYTES ARE ACCESSED THE POINTER WRAPS AROUND.
VIDEO/INTERCAST SPACE	R/W	
INTERRUPT STATUS REGISTER	R/W	READ: EXPANSION DEVICE SUPPORTS A SINGLE, 32 BIT INTERRUPT STATUS REGISTER FOR THE VIDEO GAME SYSTEM. VARIOUS BITS WILL BE ALLOCATED TO PROCESSES AS NEEDED DURING DESIGN. WRITE: INTERRUPT MASK

Fig. 9

FUNCTION	INT
MODEM DATA IN READY	Y
MODEM SEND READY	Y
RTC ALARM	Y
I ² C INTERRUPT	Y
INTERCAST	Y
DISK READ DATA READY	Y
DISK WRITE COMPLETED	Y
COUNTER AT 0	N

Fig. 10

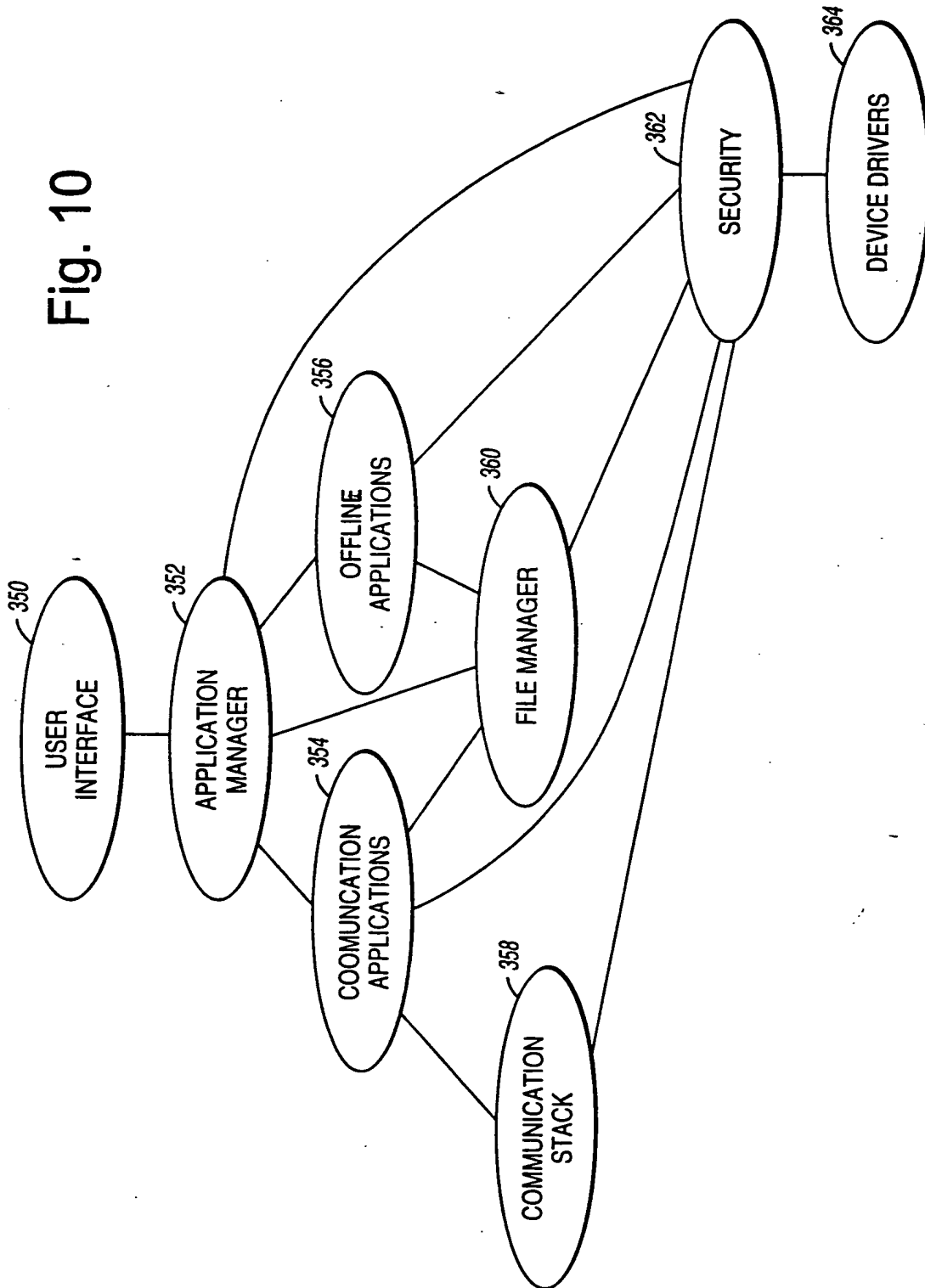


Fig. 11 is a block diagram illustrating a system architecture for secure data exchange. The system is divided into three main sections: a SERVER, a VIDEO GAME SYSTEM 50, and an EXPANSION DEVICE 95.

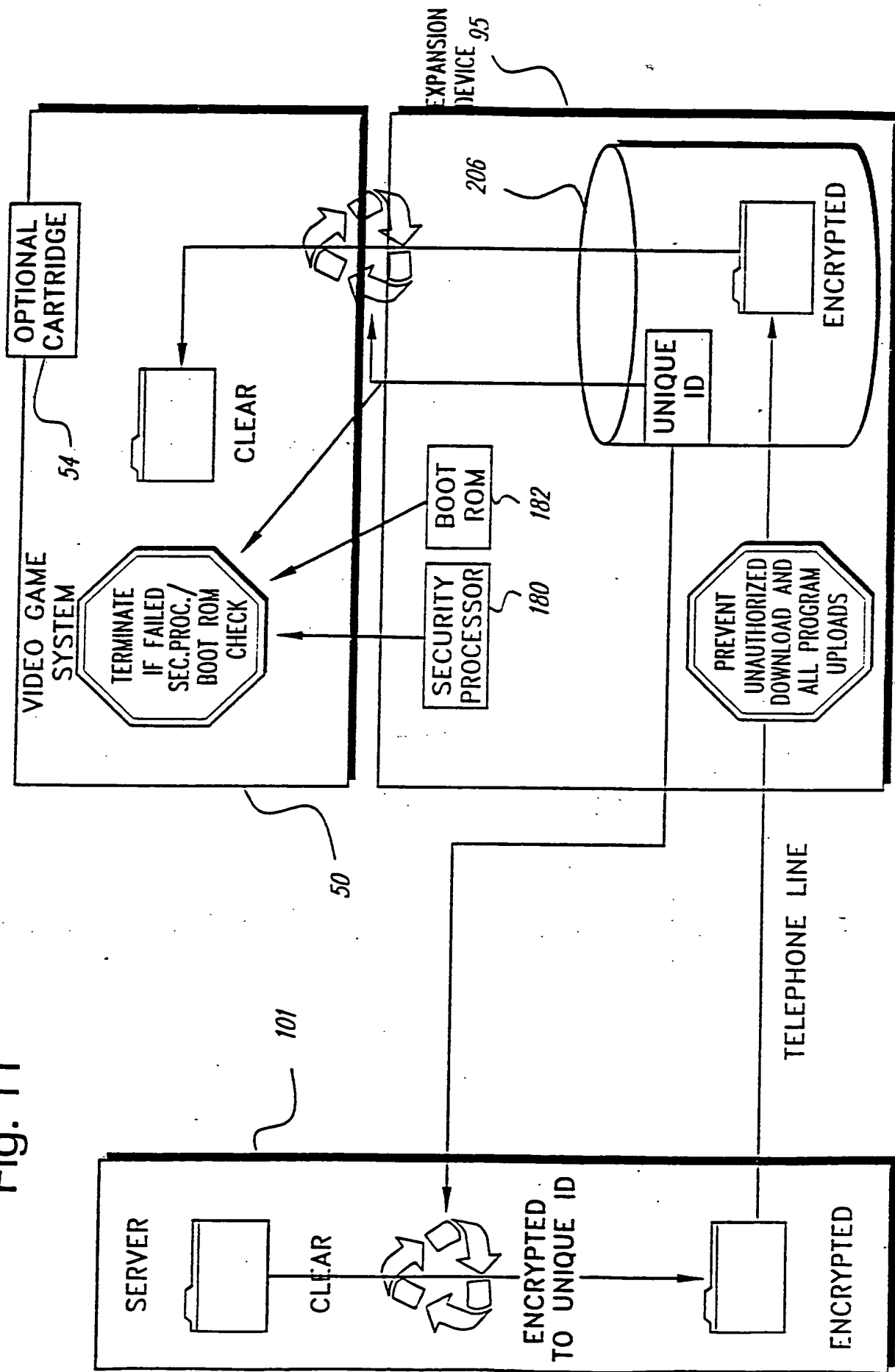
SERVER: Contains a folder icon labeled "CLEAR" and another folder icon labeled "ENCRYPTED". A circular arrow icon indicates a process flow from the "CLEAR" folder to the "ENCRYPTED" folder, with the text "ENCRYPTED TO UNIQUE ID" below the arrow.

VIDEO GAME SYSTEM 50: Contains a folder icon labeled "CLEAR" and an octagonal block labeled "TERMINATE IF FAILED SEC.PROC./BOOT ROM CHECK". A circular arrow icon indicates a process flow from the "CLEAR" folder to the octagonal block. The system is also connected to an "OPTIONAL CARTRIDGE 54".

EXPANSION DEVICE 95: Contains a folder icon labeled "ENCRYPTED" and a "UNIQUE ID" label. A circular arrow icon indicates a process flow from the "ENCRYPTED" folder to the "UNIQUE ID" label. The device is connected to a "SECURITY PROCESSOR 180" and a "BOOT ROM 182".

Connections:

- The "SERVER" is connected to the "VIDEO GAME SYSTEM 50" via a "TELEPHONE LINE".
- The "VIDEO GAME SYSTEM 50" is connected to the "EXPANSION DEVICE 95" via a "TELEPHONE LINE".
- The "SECURITY PROCESSOR 180" and "BOOT ROM 182" are connected to the "TERMINATE IF FAILED SEC.PROC./BOOT ROM CHECK" block.
- The "UNIQUE ID" label is connected to the "ENCRYPTED" folder in the "EXPANSION DEVICE 95".



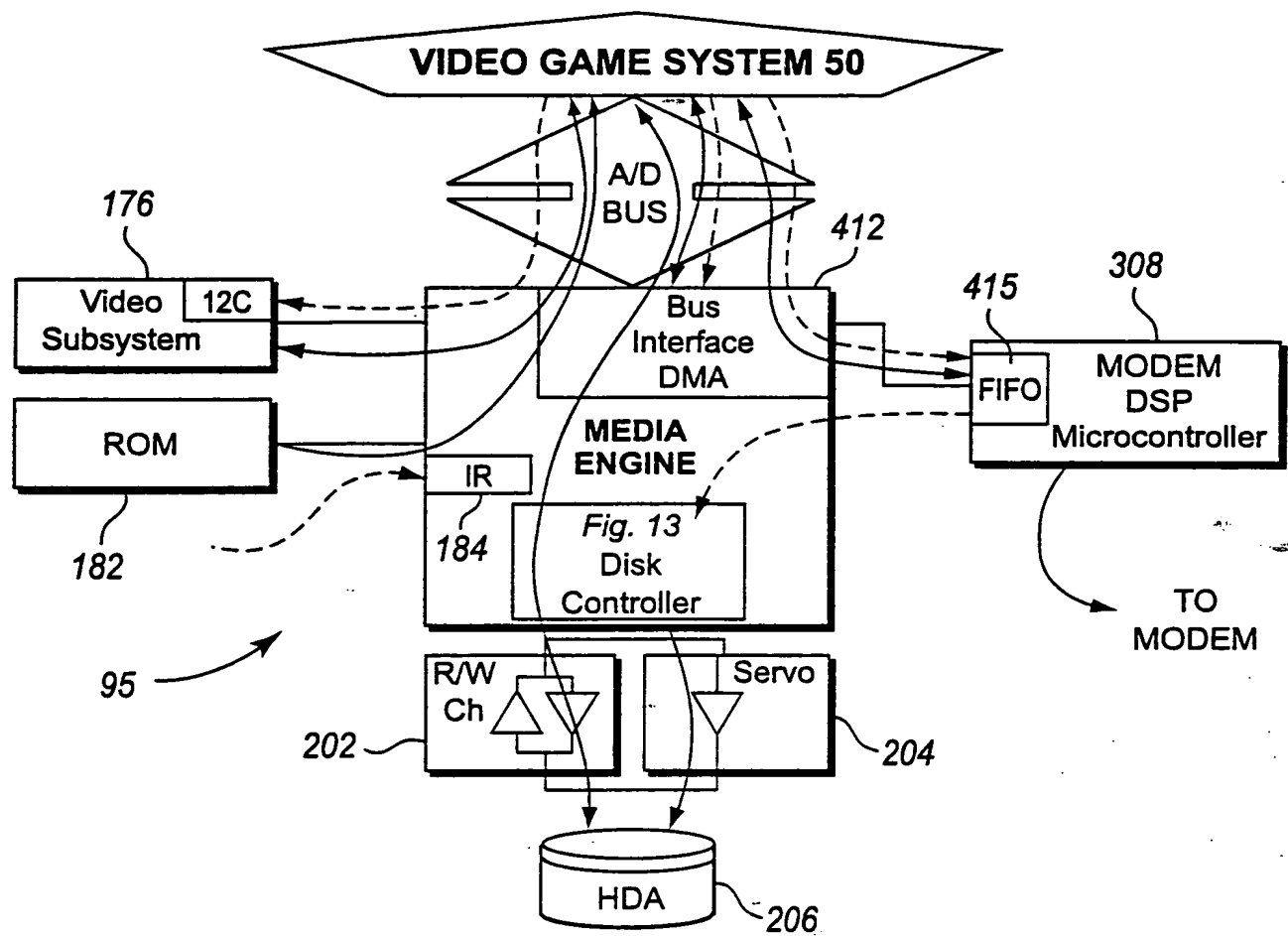


FIG. 12

FIG. 13

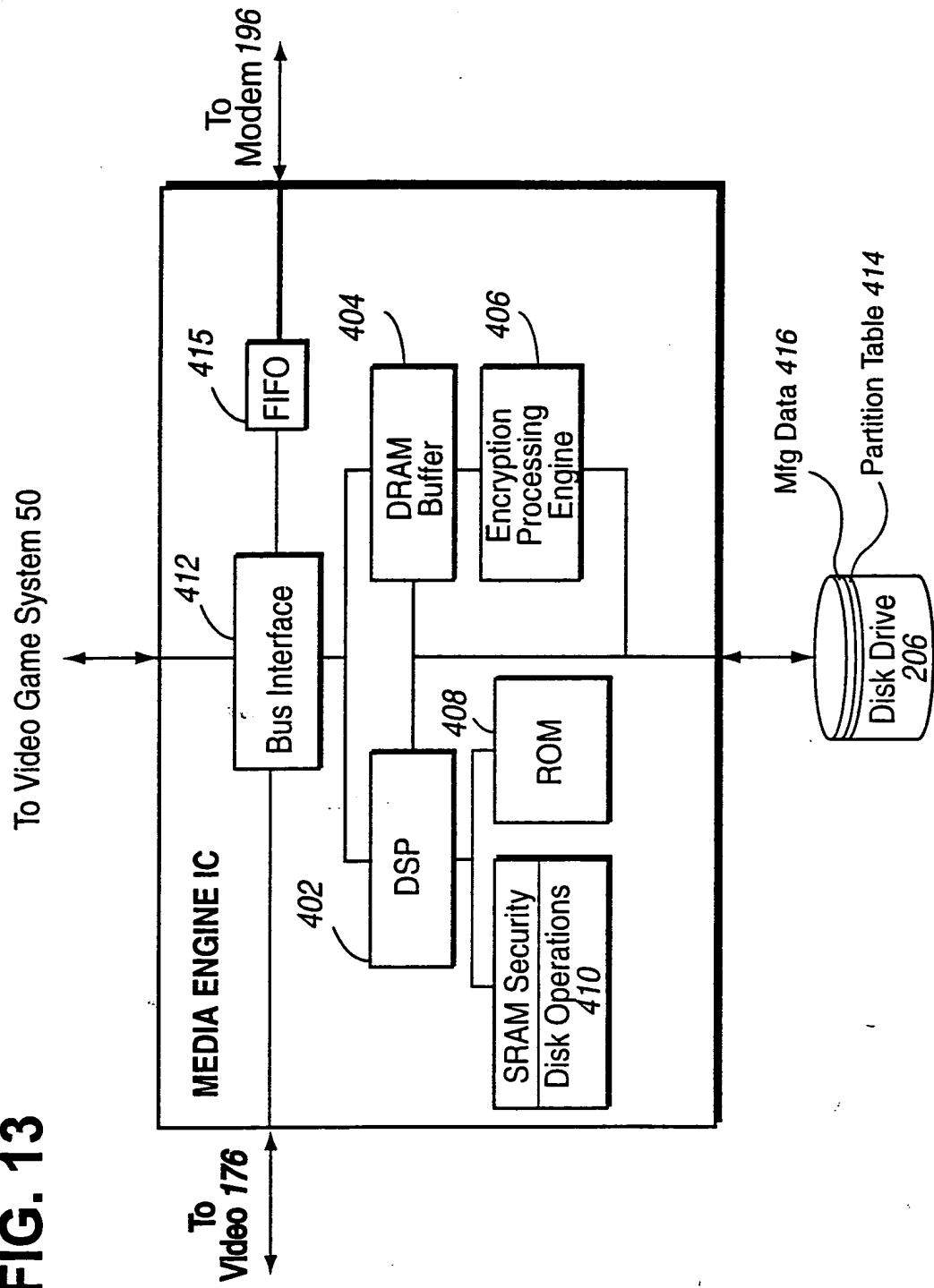
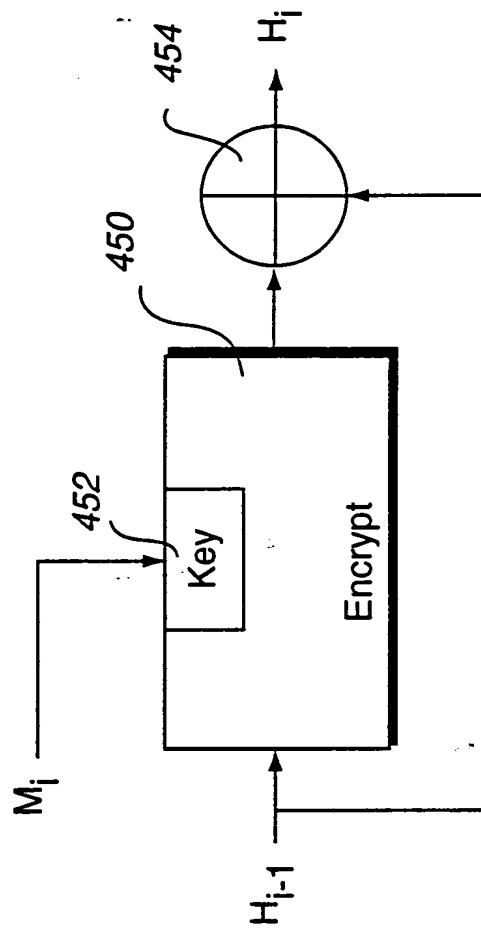


FIG. 14



BoxIDPacket

BoxID	Pad	Message ID	Direction Bit	Pad	Message Counter	Pad	Hash
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FIG. 15A

Delete

BoxID	GameID	Pad	Message ID	Direction Bit	Pad	Message Counter	Pad	Hash
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FIG. 15B

GamePresentPacket

BoxID	GameID	Pad	Message ID	Direction Bit	Pad	Message Counter	Pad	Hash
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FIG. 15C

GameIDsPacket

Offset	Size	Name	Size	Name	Size	Name	Description
...	...	IDcount	...	Reserved	...	Reserved	Total gameIDs
...	...	GameID ₁	...	Status ₁	...	Reserved ₁	First gameID
...

FIG. 15D

ContextPacket

GameID	Success=FFh Fail=00h	Size 0	Size 1	Size 2	Fill with 00f	C & R Seed for Browser, otherwise fill with 00f
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FIG. 15E

GRPacket

BoxID	Pad	Game Code	Pad	Message ID	Direction Bit	Pad	Message Counter	Pad	Hash
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FIG. 15F

DLPacket

NAME	DESCRIPTION
gameID PAD tLengthReq PAD Sig PAD ResetCounter PAD	HEADER 0x0001 - 0xFFEF = gameID (Allocated by Manufacturer) Random Padding Number of Chunks required for application Random Padding Hash of Active, protected partitions 0 & 1 Random Padding Reset Both Counts to 0 if ResetCounter = 174 Random Padding
Permissions0 PAD pLengthReq0 pLengthUsed0 PAD	Partition 0 (ENCRYPTED PROGRAM) 0 = ReadOnlyEncrypted, 1 = ReadOnlyClearText Random Padding Number of Chunks reserved in partition Number of Chunks active in partition Random Padding
Permissions1 PAD pLengthReq1 pLengthUsed1 PAD	Partition 1 (READ ONLY DATA) 1 = ReadOnlyClearText Random Padding Number of Chunks reserved in partition Number of Chunks active in partition Random Padding
Permissions2 PAD pLengthReq2 pLengthUsed2 PAD	Partition 2 (READ/WRITE DATA) 2 = Read/Write ClearText Random Padding Number of Chunks reserved in partition Number of Chunks active in partition Random Padding
PAD BoxID PAD MessageID Direction Hash	Trailer Random Padding BoxID Fill with random padding Message Counter Set to 0 Davies-Meyer check sum

FIG. 15G

START DL PACKET

VALUE	NAME	DESCRIPTION
limitedID < = 8 gameID	gameID tLengthReq Sig	HEADER 0x8000 – 0xFFEF = gameID Disk (Allocated by Manufacturer) Number of Chunks required for application Hash of Active, protected partitions
0 0 0	Permissions0 pLengthReq0 pLengthUsed0	Partition 0 (ENCRYPTED PROGRAM) 1 = ReadOnlyEncrypted, 2 = ReadOnlyClearText Number of Chunks reserved in partition Number of Chunks active in partition
1 0 0	Permission1 pLengthReq1 pLengthUsed1	Partition 1 (READ ONLY DATA) 2 = ReadOnlyClearText Number of Chunks reserved in partition Number of Chunks active in partition
2 tLengthReq < = tLengthReq	Permissions2 pLengthReq2 pLengthUsed2	Partition 2 (READ/WRITE DATA) 3 = Read/Write ClearText Number of Chunks reserved in partition Number of Chunks active in partition
gameID 0 FFh Hash	BoxID MessageID Direction Hash	Trailer BoxID Message Counter Set to 0 Davies-Meyer Hash

FIG. 16

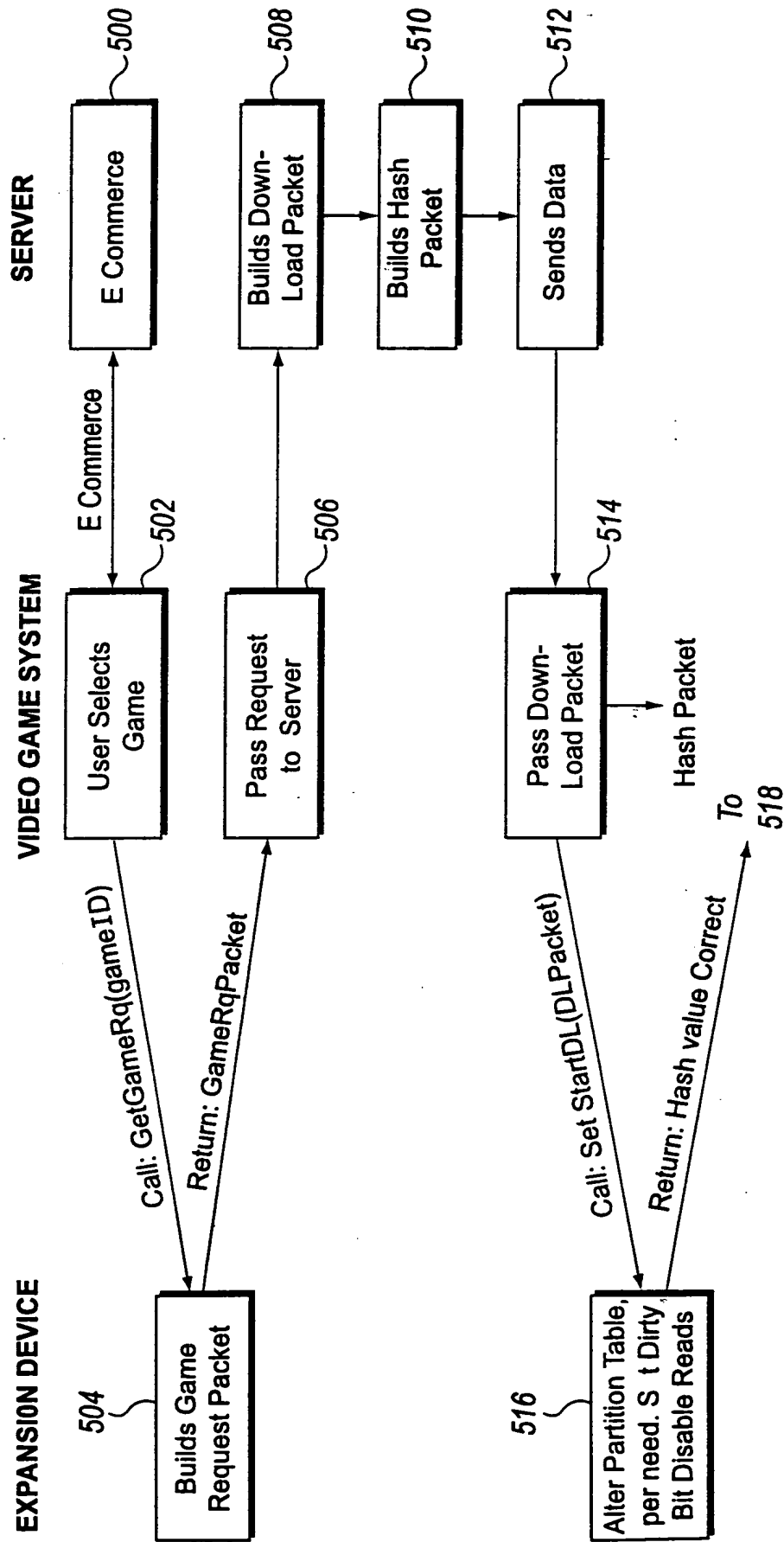


FIG. 17A

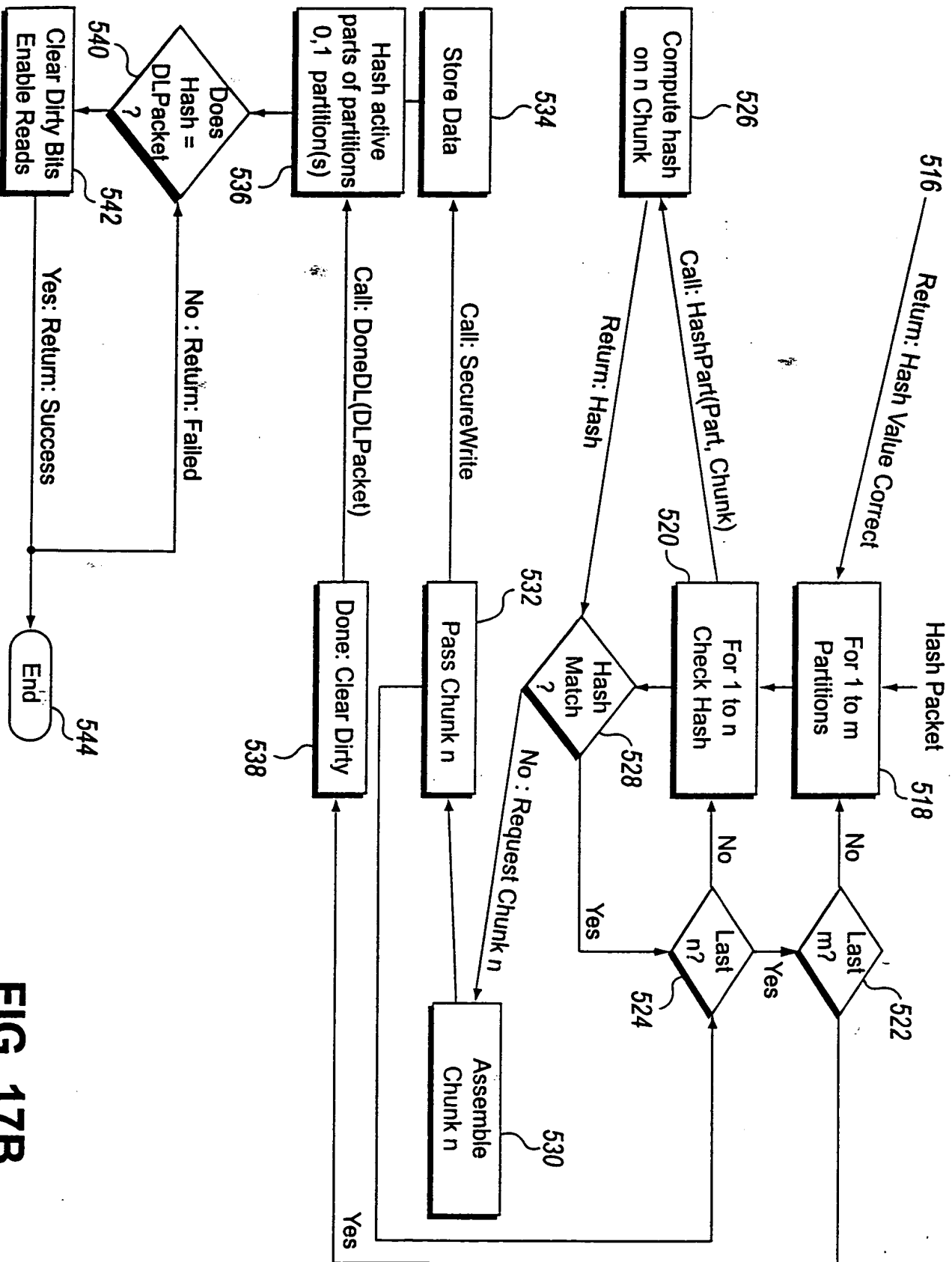


FIG. 17B

OFFSET	SIZE	NAME	USAGE
...	...	GameID	
...	...	Status	(Fig. 18B)
...	...	Start Chunk 0	
...	...	Length Chunks 0	
...	...	Used Chunks 0	
...	...	Start Chunk 1	
...	...	Length Chunks 1	
...	...	Used Chunks 1	
...	...	Start Chunk 2	
...	...	Length Chunks 2	
...	...	Used Chunks 2	
...	...	Reserved	

FIG. 18A

BITS	NAME	USAGE
0	Dirty	Update in process
1	Compact	Compaction in process on this partition
2	Used ₀	Indicates that partition 0 is used
3	Used ₁	Indicates that partition 1 is used
4	Used ₂	Indicates that partition 2 is used
5	Reserved	
6	Reserved	
7	Reserved	

FIG. 18B